Introduction to Python Exercises 03
Lists sample answers

Remember that you can come out with a different way to solve the exercises, these are just potential answers to give you a reference and also to allow you practice some of the programming concepts covered so far.

While you are getting acquainted with programming and Python as a language your objective is to produce a suitable RESULT. In the future you may find more Pythonic ways of solving the problems.

1) Given the List: `countries = ['Canada', 'Russia', 'Mexico', 'Poland']`

1.1 Print the list

```
for i in countries:
    print(i)
```

1.2 Reverse the list and print it

```
countries.reverse()

for i in countries:
    print(i)
```

1.3 Sort the list and print it

```
countries.sort()

for i in countries:
    print(i)
```

1.4 Copy the countries list to a new list countries_02

```
countries_02 = countries[:]
```

1.5 Delete the last element from countries_02

```
del countries[-1]   #   or also  countries.pop()
```

1.6 Pop the first element from countries and save it into a variable called OneCountry, print OneCountry

```
OneCountry = countries.pop(0)
```

1.7 Append the element ' Spain' to the countries list

```
countries.append('Spain')
```

1.8 Extend countries with countries_02, and print countries

```
countries.extend(countries_02)
```

1.9 Find out how many times 'Mexico' is found in the list, print the result.

```
nbr_times = countries.count('Mexico')

print('Mexico is found: ', nbr_times, ' Times')
```

2) Take a list, say for example this one:

a = [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89]

Write a program that uses a 'for loop' and prints out all the elements of the list that are less than 5. Remember to use a 'for loop', because there are other ways of doing this, but for academic purposes you should use a 'for loop'.

```
a = [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89]

for i in a:
   if i < 5:
      print(i)
```

3) Prompt the user for 10 integers (one at a time) and add them to a list (call it MyList). Then print the list.

```
mylist = []

for i in range(10):
    mynum = int(input("Please enter an integer: "))
    mylist.append(mynum)

print(mylist)
```

4) Write a program that takes a list of numbers (for example, mylist = [5, 10, 15, 20, 25]) and makes a new list with only the first and last elements of the given list. Print the new list.

```
mylist = [5, 10, 15, 20, 25]

newlist = []

newlist.append(mylist[0])

newlist.append(mylist[-1])

print (newlist)
```

5) Prompt the user for 10 integers (one at a time) and add them to a list (MyList). Check to see if the numbers '10' , '5' and '3' are in the list and print a suitable message to let us know of their existence in the list.

```
for i in range(10):
    mynum = int(input("Please enter an integer: "))

    mylist.append(mynum)


for i in [3,5,10]:
    if i in mylist:
        print("The integer ", i, " is in the list")
```

6) Prompt the user for 10 integers (one at a time) and add them to a list (MyList). Then go through each element of the list and select and print those numbers that are less than 10. Use for loops, for this exercise. You can use two different for loops, just for academic purpose.

```
for i in range(10):
    mynum = int(input("Please enter an integer: "))
    mylist.append(mynum)

for i in mylist:
    if i < 10:
        print(i)
```

7) Prompt the user for 10 integers (one at a time) and add them to a list (MyList). Then create a new list (MySecondList) which includes all the element of the first list without duplicates (for the time being use for loops for this exercise, we will see a different "more pythonic" way of doing this later on).

```
myList = []
mySecondList = []

#Create first list by prompting for 10 integers
for i in range(10):
    number = int(input("Enter an integer: "))
    myList.append(number)


#Create Second List from the elements of the first list.
for number in myList:
    if number not in mySecondList:
        mySecondList.append(number)

print(myList)
print(mySecondList)
```

8) Write a program that prompts you to enter names and continues to prompt you until you type either a 'q' or a 'Q'.

Add all the names to a list and then print the names sorted in reverse order.

```
myList = []

while True:
    name = input("Enter a name: ")

    if name in 'qQ':
        break

    myList.append(name)

myList.sort()
myList.reverse()

for name in myList:
    print(name)
```

9) Take two lists, say for example these two:

list_a = [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89]
list_b = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13]

Write a program that creates a list that contains only the elements that are common between the lists (without duplicates). Make sure your program works on two lists of different sizes.

```
list_a = [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89]
list_b = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13]
result = []
for element in list_a:
    if element in list_b and element not in result:
        result.append(element)

print(result)
```